PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING THE FILING OF AMENDMENTS OF THE CLAIMS

(PCT Administrative Instructions, Section 417)

To:

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Date of mailing (day/month/year) 06 April 2004 (06.04.2004)	
Applicant's or agent's file reference H2373 PCT	**IMPORTANT NOTIFICATION**
International application No. PCT/EP2003/008384	**International filing date** (day/month/year) 29 July 2003 (29.07.2003)
Applicant ABBOTT LABORATORIES VASCULAR ENTERPRISES, LIMITED et al	

1. The applicant is hereby notified that amendments to the claims under Article 19 were received by the International Bureau on:

   01 April 2004 (01.04.2004)

2. This date is after the expiration of the time limit under Rule 46.1.

   Consequently, the amendments will not be published and will not be considered for the international procedure.

3. The applicant is reminded that the international application (description, claims and drawings) may be amended during the international preliminary examination under Chapter II, according to Article 34, and in any case, before each of the designated Offices, according to Article 28 and Rule 52, or before each of the elected Offices, according to Article 41 and Rule 78.

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ABBOTT LABORATORIES...
Our Ref.: H2373 PCT

Claims

1. An expandable tubular member comprising a plurality of unit cells, each unit cell comprising a first segment having proximal and distal ends and a substantially sinusoidal shape, and a second segment having proximal and distal ends, the proximal end of the first segment coupled to the proximal end of the second segment, the distal end of the first segment coupled to the distal end of the second segment, the second segment being more flexible than the first segment, wherein the unit cell has a stable contracted state in which the second segment substantially conforms to the sinusoidal shape of the first segment, and a deployed state in which the second segment has a convex shape bowed away from the first segment,

characterized in that around a circumference of the expandable tubular member, two second segments are disposed between every two first segments.

2. The expandable tubular member of claim 1 wherein the second segment of each unit cell is coupled to the first segment so that the first segment inhibits deformation of the second segment in the contracted state.

3. The expandable tubular member of claim 1 wherein the second segment of each unit cell is stable only in the contracted and deployed states.

4. The expandable tubular member of claim 1 wherein the first segment of each unit cell is substantially rigid.

5. The expandable tubular member of claim 1 wherein the first segment of each unit cell comprises a larger cross-sectional area than the second segment.

6. The expandable tubular member of claim 1 wherein the first and second segments of each unit cell are manufactured using different materials.

7. The expandable tubular member of claim 1 wherein the proximal and distal ends of the first and second segments of each unit cell are coupled together by hinges.

8. The expandable tubular member of claim 7 wherein the hinges of each unit cell are elastic hinges.

9. The expandable tubular member of claim 7 wherein the hinges of each unit cell are plastic hinges.

10. The expandable tubular member of claim 1 wherein the unit cells are transformed from the contracted state to the deployed state by application of a uniform radially outwardly directed force to an interior surface of the expandable tubular member.

11. The expandable tubular member of claim 1 where a first subset of the plurality of unit cells has a second segment with a first cross-sectional area and a second subset of the plurality of unit cells has a second segment with a second cross-sectional area.

12. The expandable tubular member of claim 1 wherein the plurality of unit cells are arranged in a longitudinally arranged series of circumferential rings.

13. The expandable tubular member of claim 1 wherein the expandable tubular member is capable of attaining different outer diameters depending on the amount and location of unit cells that are transformed to the deployed state.

14. The expandable tubular member of claim 1 wherein the unit cells are designed and arranged to provide a range of diameters for the expandable tubular member in a stepwise fashion.

15. The expandable tubular member of claim 14 wherein the expandable tubular member has an initial diameter at a first end, a final diameter at a second end, and at least one intermediate diameter between the first and second ends, the intermediate diameter differing from the initial and final diameters.

16. The expandable tubular member of claim 15 wherein the initial and final diameters are the same.

17. The expandable tubular member of claim 12 wherein within a circumferential ring, a first subset of unit cells has a different force-displacement characteristic than a second subset of the plurality of unit cells.

18. The expandable tubular member of claim 1 wherein the second segments of adjacent unit cells are coupled to a common first segment.

19. The expandable tubular member of claim 18 wherein the second segment of each unit cell is coupled to the second

segment of an adjacent cell by a joint disposed near a midpoint of the second segments.

20. The expandable tubular member of claim 1 wherein the expandable tubular member is made from a polymer, a metal, a composite, a shape memory material with superelastic behavior, a shape memory material with temperature sensitive behavior, or a combination of two or more of these materials.

21. A method for deploying a expandable tubular member having two substantially stable states, the method comprising:

providing a expandable tubular member comprising a plurality of unit cells in a contracted state, wherein each unit cell comprises a first segment having proximal and distal ends and a substantially sinusoidal shape, and a second segment having a proximal end that is coupled to the proximal end of the first segment and a distal end that is coupled to the distal end of the first segment, the second segment being more flexible than the first segment, wherein the second segment substantially conforms to the sinusoidal shape of the first segment in the contracted state, characterized in that around a circumference of the expandable tubular member, two second segments are disposed between every two first segments; and

deploying at least one of the unit cells of the expandable tubular member by causing the second segment of the unit cell to deploy to a convex shape bowed away from the first segment of the unit cell.

22. The method of claim 21 wherein the expandable tubular member is provided in the contracted state by compressing the expandable tubular member onto a delivery device.

23. The method of claim 22 wherein at least one unit cell is deployed by applying a radially outward force by expanding the delivery device.

24. The method of claim 21 wherein unit cells of the expandable tubular member are deployed in a stepwise fashion.

25. The method of claim 21 wherein the number of unit cells that are deployed is proportionate to a radially outward force that is applied to the expandable tubular member.

26. The method of claim 21 wherein unit cells are selectively deployed by providing second segments having varying diameters.

27. The method of claim 21 wherein the diameter of the expandable tubular member in a deployed state is varied by varying lengths of first and second segments of a unit cell.

28. The method of claim 21 wherein the diameter of the expandable tubular member in a deployed state is varied by varying the number of unit cells that are provided in the contracted state.